Defense Information Infrastructure (DII)

Common Operating Environment (COE)

Statement of Functionality (SOF)
for the
METOC Observations Database (MDMETC) Segment

2 August 1999

Prepared for:
Space and Naval Warfare Systems Command
Environmental Systems Program Office
(SPAWAR PMW-185)

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1 SCOPE

1.1 Identification

This document describes the functionality of the METOC Observations Database (MDMETC) Segment of the METCAST data distribution software developed by Fleet Numerical Meteorology and Oceanography Center (FNMOC), Monterey, CA.

1.2 System Overview

METCAST is a standards-based, request-reply and subscription (channel) system for distributing weather information over the Internet using Hyper-Text Transfer Protocol (HTTP) and Multipurpose Internet Mail Extensions (MIME). The METCAST Server Segment is responsible for processing requests for data from METCAST Clients, interfacing with a database to attempt to satisfy each request, and formatting the retrieved data as specified in the request before returning the data to the client. The METCAST Client comprises a separate segment. The MDMETC segment provides the observations database for METCAST Server.

1.3 Document Overview

Section 2 of this document describes the METCAST system in greater detail to afford some insights into the role filled by the MDMETC segment. Section 3 describes the functionality of the MDCHNL segment.

2 METCAST FUNCTIONALITY OVERVIEW

METCAST is a standards-based, request-reply and subscription system used to transmit data across the web using HTTP. METCAST uses a client-server architecture in which a server, connected to a METOC database, publishes a dynamic product list showing all data currently in the system and all channels available through the server. Clients subscribe to the product list automatically when their connection to a server is active, and thus continually maintain a list of data available on the system. A client may be connected to multiple servers, and will maintain a separate product list for each server.

The METCAST Client provides a graphical user interface (GUI) that allows users to:

- Define geographical areas of interest in Mercator or polar stereographic projections, or select from available satellite areas or special areas.

- Define a product suite for each area of interest defined. Products are selected from a Dynamic Product List that is constantly updated by each server, so that the user only sees those products that are actually available for download at the time of selection.

- For each server, specify the scheduling options for each type of data (grids, observations, imagery, and channels) requested. Products may be retrieved on demand, at scheduled times, or at specified intervals. The user may also specify the number of images to be held on the system and the maximum age of the products to be retrieved.

- Schedule areas of interest. The system will not retrieve any data for an area until it is scheduled (activated). Once scheduled, the area may be unscheduled at any time to deactivate retrievals.

- Monitor and interact with retrievals in progress. A Java-based Retriever Monitor shows the status of active and completed retrieval sessions, and allows the user to start a stopped or sleeping session, stop an active or sleeping session, or remove a session entirely. An Area Status function is also available to show in real time the products retrieved for an area.

- To view, in conjunction with Joint METOC Viewer (JMV), all downloaded data on a map background or, for upper air data, a Skew-T, Log P diagram.

When a request is scheduled, the METCAST Client formulates a request message and forwards it via Hyper-Text Transfer Protocol (HTTP) to the server(s) from which the data are requested. The server checks its database to find out whether it has any new data to fill the request. If not, it

returns a message to that effect. If there is new data, the server extracts the data from its database, packages it, and returns it to the client.

The MDMETC segment provides functionality at the server end to set up and administer a database of observation data. This data may include surface synoptic observations, hourly observations (METARs), special observations (SPECIs), upper air observations, bathythermograph observations, pilot reports, and other meteorological and oceanographic observations.

3 MDMETC SEGMENT FUNCTIONALITY

MDMETC is based on a Commercial Off-the-Shelf (COTS) relational database management system (RDBMS) (currently Informix 7.2 or 7.3). MDMETC provides storage for the undecoded text of each observation, as well as certain parameters decoded from each observation. MDMETC currently stores the following types of observation data:

Table 3-1. METOC Database Observation Data Types

Type	Description	WMO Alphanumeric Code
Fixed Surface Station Synoptic Reports	Synoptic report from surface stations reported at regular intervals.	FM-12
Ship Synoptic Reports	Synoptic report from ships reported at regular intervals.	FM-13
METAR/SPECI	Aviation Routine Weather Reports and Aviation Selected Special Weather Report.	FM-15, FM-16
Fixed Buoy Report	Reports from fixed ocean buoys.	FM-18
Drifting Buoy Report	Reports from drifting ocean buoys.	FM-18
Upper Air Winds Reported at pressure levels from fixed land station	Upper air report from a surface station that reports only wind information at standard and significant isobaric levels that was taken from a fixed land station.	FM-32
Upper Air Winds Reported at pressure levels from sea station	Upper air report from a surface station that reports only wind information at standard and significant isobaric levels that was taken from a sea station.	FM-33
Upper Air Winds Reported at pressure levels from a mobile land station	Upper air report from a surface station that reports only wind information at standard and significant isobaric levels that was taken from a mobile land station.	FM-34
Upper Air Temperature Report at pressure levels from a fixed land station	Upper air report from a surface fixed land station that reports wind and temperature information at standard and significant isobaric levels.	FM-35
Upper Air Temperature Report at pressure levels from a ship station	Upper air report from a ship station that reports wind and temperature information at standard and significant isobaric levels.	FM-36

Table 3-1. METOC Database Observation Data Types

Type	Description	WMO Alphanumeric Code
Upper Air Temperature Report at pressure levels from a dropsonde	Upper air report from a sonde dropped from a balloon or aircraft station that reports wind and temperature information at standard and significant isobaric levels.	FM-37
Upper Air Temperature Report at pressure levels from a fixed land station	Upper air report from a surface fixed land station that reports wind and temperature information at standard and significant isobaric levels.	FM-38
Upper Air Winds Reported at heights from a surface station	Upper air reports from a surface station that reports only wind information at geopotential heights.	FM-39
Upper Air Winds Reported at heights from a ship	Upper air reports from a ship station that reports only wind information at geopotential heights.	FM-40
Aerodrome Forecast	Reports and forecast from airfields.	FM-51
Bathy Report	Report of a bathythermal observation.	FM-63
TESAC	Temperature, Salinity, and current reports from a sea station.	FM-64
SIGMET	Significant Meteorological Information Bulletin	N/A